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EXAMINER

EL-ZOOBI, MARIA

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2614

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PAPER

Please find below and/or attached an Office communication concerning this application or proceeding.

The time period for reply, if any, is set in the attached communication.

Office Action Summary	Application No. 10/633,498	Applicant(s) BARSOUM ET AL.	
	Examiner MARIA EL-ZOOBI	Art Unit 2614	

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) OR THIRTY (30) DAYS, WHICHEVER IS LONGER, FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

Status

- 1) ☒ Responsive to communication(s) filed on 22 May 2008.
- 2a) ☐ This action is **FINAL**. 2b) ☒ This action is non-final.
- 3) ☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

Disposition of Claims

- 4) ☒ Claim(s) 1-16 and 18-20 is/are pending in the application.
- 4a) Of the above claim(s) _____ is/are withdrawn from consideration.
- 5) ☐ Claim(s) _____ is/are allowed.
- 6) ☒ Claim(s) 1,4,5,7-10 and 16-19 is/are rejected.
- 7) ☐ Claim(s) 2,3,6,11-15 and 20 is/are objected to.
- 8) ☐ Claim(s) _____ are subject to restriction and/or election requirement.

Application Papers

- 9) ☐ The specification is objected to by the Examiner.
- 10) ☒ The drawing(s) filed on 08/05/2003 is/are: a) ☒ accepted or b) ☐ objected to by the Examiner.
Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).
Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).
- 11) ☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

Priority under 35 U.S.C. § 119

- 12) ☐ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).
- a) ☐ All b) ☐ Some * c) ☐ None of:
1. ☐ Certified copies of the priority documents have been received.
 2. ☐ Certified copies of the priority documents have been received in Application No. _____.
 3. ☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

* See the attached detailed Office action for a list of the certified copies not received.

Attachment(s)

- | | |
|--|---|
| 1) <input checked="" type="checkbox"/> Notice of References Cited (PTO-892) | 4) <input type="checkbox"/> Interview Summary (PTO-413) |
| 2) <input type="checkbox"/> Notice of Draftsperson's Patent Drawing Review (PTO-948) | Paper No(s)/Mail Date. _____ |
| 3) <input type="checkbox"/> Information Disclosure Statement(s) (PTO/SB/08) | 5) <input type="checkbox"/> Notice of Informal Patent Application |
| Paper No(s)/Mail Date _____ | 6) <input type="checkbox"/> Other: _____ |

DETAILED ACTION

Response to Arguments

1. Applicant's arguments filed on 5/22/2008 with respect to the rejection(s) of claim(s) 1-20, have been fully considered and are persuasive. Therefore, the rejection has been withdrawn. However, upon further consideration, a new ground(s) of rejection is made in view of Applicant's argument.

Regarding claim 7, Applicant argues that Matsumoto does not disclose the predetermined number of bits comprises a plurality of bits and the plurality of tones comprises N-non consecutive tones. Examiner respectfully does not disagree. Matsumoto in paragraph 0177 teaches "that number of bits which can be transmitted to a plurality of tones", also in Paragraph 0179, Matsumoto teaches "the number of bits assigned by tone ordering", which means that a number of bits will be assigned to a number of tones, which meet the limitation language. However, Applicant's remarks on the limitation N non-consecutive tones, the claim language does not further define in which way they are consecutive, therefore Examiner maintain the rejection for the mentioned limitations.

Regarding claims 18-19 Applicant argues that these claims should be allowable for similar reasons given in claim 2 arguments. Examiner respectfully disagrees. Applicant argues in claim 2 that Matsumoto does not disclose that the predetermined number of bits of data comprises one bit and that the transmitting comprises transmitting each bit of data on each of N non consecutive tones. However these

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limitations are not recited in claim 18, therefore, Examiner maintains the rejection for claims 18-19.

Applicant's argument regarding claims 4-5 is moot in the new rejection.

Claim Rejections - 35 USC § 103

2. The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

(a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negated by the manner in which the invention was made.

3. Claims 1, 4-5, 7, 8-10, 16-19 are rejected under 35 U.S.C. 103(a) as being unpatentable over Matsumoto (US 20030026346) in view of Hocesvar (US 20040148560).

Regarding claim 1, Matsumoto discloses, in a discrete multi tone (DMT) system, a method for transmitting data between a first device and a second device (Paragraph 5-7), the method comprising:

allocating a predetermined number of bits of data for each of a plurality tones (Paragraph 0177)

transmitting redundant sets of data on each of a plurality of different tones (Paragraph 0080 and 0097, lines 9-11),

each redundant set including the predetermined number of bits of data (Paragraph 0180; the redundant data include 2 bits);

receiving the redundant sets of data by the second device (Paragraph 0080); and

Matsumoto does not disclose identifying the data represented by the redundant sets of data using a voting scheme.

Hocevar discloses identifying the data represented by the redundant sets of data using a voting scheme in DMT system (Paragraph 0007 and Fig. 2)

Therefore, it would have been obvious to one with ordinary skill in the art, at the time the invention was made to modify Matsumoto with Hocevar in order to minimize the possibility of errors.

Regarding claim 7, Matsumoto discloses, the predetermined number of bits comprises a plurality of bits and the plurality of tones comprises N non-consecutive tones (Paragraph 0177 and 0179)

wherein the identifying comprises:
decoding the N non-consecutive tones to identify the plurality of bits (Paragraph 0081; the decoder will decode the received tones), and voting on the identity of each of the plurality of bits on a bit-by-bit basis (Hocevar: Paragraph 0007).

Regarding claim 8, Matsumoto discloses, a first device configured to communicate using discrete multi tone (DMT) modulation (Paragraph 0082; communication apparatus operates using DMT), comprising:

logic configured to allocate a first number of bits of data for each of a plurality of tones (Fig. 3, el. 147 and Paragraph 0177)

logic configured to receive a redundant set of data via a plurality of tones from a second device (Fig. 3, el. 153, Paragraph 0087 and 0089; the reception side of the apparatus will receive data “which is inherently coming from another device” this data include information bits and redundant).

Matsumoto does not disclose a logic configured to identify the data based on a voting scheme.

Hocevar discloses logic configured to identify the data based on a voting scheme in DMT system (Paragraph 0007 and 0200).

Therefore, it would have been obvious to one with ordinary skill in the art, at the time the invention was made to modify Matsumoto with Hocevar in order to minimize the possibility of errors.

Regarding claim 9, Matsumoto in view of Hocevar discloses, the plurality of tones comprises N tones, where N is an odd integer, and the first number of bits of data comprises one bit (Matsumoto: Paragraph 0179, lines 14-14; only one bit of information, Paragraph 0085, 0178 and 0179; the tone ordering process will generate N different tones, Paragraph 0180, lines 2-3; the 1 information bit is being transmitted on an odd tones 0, 1, 7 and 9).

Regarding claim 10, Matsumoto in view of Hocevar discloses, the first device of comprising:
logic configured to decode the data transmitted on each of the N tones and forward the decoded data (Fig. 1b and Paragraph 0101) and the logic configured to identify the data

comprises: a voter configured to receive the decoded data, and determine that a bit is equal to a first value when more than one half of the decoded N tones correspond to the first value (Hocevar: Paragraph 0007).

Regarding claim 15, Matsumoto in view of Hocevar discloses, the logic configured to identify the data is configured to decode the received redundant set of data, and identify the data on a bit-by-bit voting (Hocevar: Paragraph 0007).

Regarding claim 16, Matsumoto discloses, a first device configured to communicate in a discrete multi tone (DMT) system (paragraph 0082; communication apparatus operates using DMT) comprising:

a transmitter configured to transmit redundant data on a first number of tones to a second device (Fig. 2 and paragraph 0083, 0085 and 0097, lines 9-11 teaches that the data been transmitted is a redundant data) and

a receiver configured to receive data transmitted on the first number of tones from the second device (Fig. 3, Paragraph 0087 and 0089)

Matsumoto does not disclose decode the data received on the first number of tones, and determine the identity of the received data based on determination that a bit or group of bits is equal to a first value when more than one half of the decoded first number of tones corresponds to the first value.

Hocevar discloses, decode the data received on the first number of tones, and determine the identity of the received data based on determination that a bit

or group of bits is equal to a first value when more than one half of the decoded first number of tones corresponds to the first value (Hocevar: Paragraph 0007; using a majority voting).

Therefore, it would have been obvious to one with ordinary skill in the art, at the time the invention was made to modify Matsumoto with Hocevar in order to minimize the possibility of errors.

Regarding claim 18, Matsumoto in view of Hocevar discloses, when transmitting redundant data to the second device, the transmitter is configured to:
transmit a predetermined number of bits representing the redundant data on each of the first number of tones (Paragraph 0179 and 0180; transmit a number of information bits and a number of redundant bits on different tones)

Regarding claim 19, Matsumoto in view of Hocevar discloses, the first number of tones comprises non-consecutive tones in the DMT system (Paragraph 0180; transmitting the data on different tone sets, each set comprises a number of tones and these tones are arranged in non-consecutive way i.e., 1, 7, 9).

4. Claims 4-5 are rejected under 35 U.S.C. 103(a) as being unpatentable over Matsumoto (US 20030026346) in view of Hocevar (US 20040148560) and further in view of Poggiolini (US 6,621,617).

Regarding claim 4, Matsumoto in view of Hocevar discloses, transmitting a data bit that represent Information bit, however Matsumoto in view of Hocevar does not talk about the transmission of these bits on maximum or minimum power level.

Poggiolini discloses, transmitting a data bit representing a "1" with a maximum or near-maximum power level (Col. 3, lines 8-23).

Therefore, it would have been obvious to one with ordinary skill in the art, at the time the invention was made to modify Matsumoto in view of Hocevar transmission system to transmit the data bit, as suggested by Poggiolini, in order to save power.

Regarding claim 5, Matsumoto in view of Hocevar and further in view of Poggiolini discloses, the transmitting further comprises: transmitting a data bit representing a "0" with a zero or near-zero power level (Matsumoto: Col. 3, lines 8-23).

Allowable Subject Matter

5. Claims 2-3, 6, 11-15 and 20 objected to as being dependent upon a rejected base claim, but would be allowable if rewritten in independent form including all of the limitations of the base claim and any intervening claim.

Conclusion

Any inquiry concerning this communication or earlier communications from the examiner should be directed to MARIA EL-ZOOBI whose telephone number is (571)270-3434. The examiner can normally be reached on Monday-Friday (8AM-5 PM).

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If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Curtis Kuntz can be reached on 571-272-7499. The fax phone number for the organization where this application or proceeding is assigned is 571-273-8300.

Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see <http://pair-direct.uspto.gov>. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free). If you would like assistance from a USPTO Customer Service Representative or access to the automated information system, call 800-786-9199 (IN USA OR CANADA) or 571-272-1000.

/M. E./
Examiner, Art Unit 2614

/Quoc D Tran/

Primary Examiner, Art Unit 2614